Electromagnetic Radiation Safety

Scientific and policy developments regarding the health effects of electromagnetic radiation exposure from cell phones, cell towers, Wi-Fi, Smart Meters, and other wireless technology

Tuesday, November 10, 2015

Analysis of Cellular Phone Radiation Hazards in 2002

My comments: This paper was written in 2002 by Jamie Wisz while a 3rd year law student at Harvard. Thirteen years later despite the preponderance of peer-reviewed research evidence which indicates that exposure to mobile phone radiation is harmful to humans, the FCC maintains the same obsolete RF standards adopted in 1996 and cell phone testing procedures have not been improved despite recommendations from the General Accountability Office, the American Academy of Pediatrics and other medical associations and consumer organizations.

Moreover, the FDA has failed in its responsibility to protect public health. The agency's efforts to promote research on cell phone radiation health effects have been seriously deficient. The FDA recommended a major research project on the health effects of exposure to second generation (2G) cell phone radiation on rodents, but more than a decade later the National Toxicology Program project has yet to publish a single result.

Below are excerpts from Ms. Wisz's insightful analysis along with her policy recommendations. Perhaps the legal analysis she provided (not summarized below) will be useful to lawyers who are interested in defending the necessity for local and state cell phone "right to know" laws since the FDA and FCC have shirked their responsibility to protect the American public for almost two decades.light of the VW "dieselgate" scandal, some scientists have become concerned about how easy it would be to rig a cell phone to pass the FCC cell phone RF radiation certification test.

Ms. Wisz's paper is available from Harvard at the link below.

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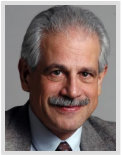
Jamie Wisz. Potential Hazards of Cellular Phone Radiation: Responses to Fear and Uncertainty. 2002 Third Year Paper. Harvard Law School. May 2002. http://nrs.harvard.edu/urn-3:HUL.InstRepos:8889484

Abstract

In recent years, the public has become concerned that the electromagnetic radio-frequency radiation (RF radiation) emitted by cellular telephones may pose serious health risks, including the risk of cancer. There are over 110 million cell phone users in the United States and many of them may not know that cell phones actually send electromagnetic waves into the user's brain. Depending on how close the cell phone antenna is to one's head, as much as sixty percent of the microwave radiation from the phone is absorbed by, and actually penetrates the head, possibly reaching as far as an inch-and-a-half into the brain. The problem is that it is still unknown whether or not this RF radiation from cellular phones actually causes any sort of damage to the user.



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This paper will explore many aspects of the issue of cellular phone radiation. The first section of the paper will explain what RF radiation is and provide an overview of the various scientific studies which have examined the effects of RF radiation on health. The second section of the paper will discuss and critique the regulatory responses by the FDA and the FCC in the midst of this scientific uncertainty. The third section of the paper will provide an overview of the judicial treatment of cell phone radiation issues by exploring some of the recent case law in this area. Finally, the last section of the paper will provide policy recommendations for how the FDA and FCC *should* be responding to this potential health crisis.

https://dash.harvard.edu/handle/1/8889484

Excerpts

> The only thing that is clear right now is the fact that it is still unknown whether or not cell phone use can be deleterious to one's health. It also seems as if conclusive scientific data on this topic may not be available for another several years **....**
> ... It should be noted that there are various government agencies that are responsible for different aspects of mobile phone safety. These agencies include the Food and Drug Administration (FDA"), Federal Communications Commission (FCC"), National Institute for Occupational Safety and Health, Environmental Protection Agency, Occupational Health and Safety Administration, National Telecommunications and Information Administration, and the National Institutes of Health.79 The following section will focus on the two agencies with the most responsibility in this area: the FDA and the FCC.
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> **FDA's Role**
> The FDA is empowered by Congress to directly regulate electronic products that emit radiation with regard to public health and safety. Therefore, the FDA has the primary responsibility to respond to the concern over cellular telephones. The FDA receives this enforcement authority through the Electronic Product Radiation Control Provisions of the Federal Food, Drug, and Cosmetic Act. The Radiation Control Provisions, originally enacted as the Radiation Control for Health and Safety Act of 1968, are located in Sections 531 through 542 of the Act ...
>
> Currently, the FDA does not review the safety of radiation-emitting consumer products such as mobile phones before marketing, as it does with new drugs or medical devices. 83 However, the agency does have the authority to take action if mobile phones are shown to emit radiation at a level that is hazardous to the user.84 \In such a case, the FDA could require the manufacturers of mobile phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists."85
>
> For many years it seemed as if the FDA refrained from exercising the full extent of its powers over the cell phone industry. Instead, the FDA chose to take limited actions until the scientific community could con firm the presence of hazards associated with exposure to RF radiation.86 The FDA first took action in 1993, when it met with representatives of the cellular telephone industry to discuss the potential health problems associated with cell phones and possible solutions.87 Since then, the FDA has worked with manufacturers in order to seek ways to minimize human exposure to RF radiation.88 For example, the FDA and manufacturers have discussed the advantages and disadvantages of redesigning the placement of the antenna so that the source of radiation is further away from the user's head.89
>
> In recent years, the FDA has also become more active in overseeing and supporting research on the effect of RF radiation exposure on human health. For instance, the FDA is working with the U.S. National Toxicology Program as well as with groups of investigators around the world to ensure that high priority animal studies are conducted to address important questions about the effects of RF exposure.90 The FDA has also urged the mobile phone industry to cooperate in providing mobile phone users with the best possible information on what is known about the possible effects of mobile phone use on human health.91 ....
> Although the FDA's more recent actions have been somewhat proactive, this was not the case for many years. In fact, until the formation of the CRADA in 2000, the FDA seemed content with waiting for the scientific results from WTR's research on the health effects of mobile phones. However, WTR was funded by the cellular telephone industry itself. Certainly it seems as if there is a conflict of interest problem which arises from the fact that the industry was allowed to do its own scientific testing with little or no oversight.107 ....

- ► June (1)
- ► May (2)
- ► April (6)
- ► March (2)
- ► February (2)
- ► January (3)

► 2014 (10)
► 2013 (40)

At this point, the FDA has not prescribed any standards for the cell phone industry. While it is true that the FDA needs to become aware of the health effects of cell phone radiation before any standards can be promulgated, up until June of 2000, the FDA took virtually no steps towards advancing this research. Due to the conflict of interest problem, reliance on the cell phone industry to do their own scientific research was insufficient ... As shown in the scientific studies discussed above, there was evidence as early as the 1970's that exposure to EMF's could have a detrimental impact on one's health.111 Certainly by the early 1990's there was increasing evidence that cell phone radiation could be harmful.112 ....

... since the EPRC provision puts the FDA in the lead role of protecting the public health from cell phone radiation, the FDA simply acted too slowly in reacting to this potential health concern. The last section of this paper will make some additional suggestions as to what other measures the FDA should currently take to ensure public knowledge and safety in this area.

FCC's Role

The FCC is required by the National Environmental Policy Act of 1969 to evaluate the effect of emissions from FCC-regulated transmitters on the quality of the human environment.113 On August 1, 1996, under intense Congressional pressure to act, the FCC adopted and issued a new set of RF radiation exposure guidelines that were applicable to cellular telephones for the first time.114

Because the FCC does not consider itself a health agency with the expertise to determine what levels of radiation are safe, it turned to health experts (such as the FDA), and radiation experts outside of the FCC for guidance on these regulations.115 The FCC adopted exposure limits based on industry standards established by the American National Standards Institute (ANSI), the Institute of Electrical and Electronic Engineers (IEEE), and the National Council on Radiation Protection and Measurements (NCRP).116 These limits for cellular telephones are based on exposure criteria quantified in terms of specifi c absorption rate (SAR), which is a measure of the rate of RF absorption into the body.117 Cellular telephones must be below the SAR limit of 1.6 watts/kg as averaged over one gram of tissue.118 ....

There are many scientists and commentators who argue that the FCC's guidelines are an ineffective and/or inadequate measure to guard against any of the potential risks of RF radiation.122 According to some scientists, the FCC's guidelines are flawed because they do not take into account the possibility that weaker levels of RF radiation are just as harmful to human health as stronger levels.123 ... Others argue that the FCC's exposure standards are inadequate because they are limited to providing protection from thermal effects and fail to address potential non-thermal e ffects.126 ... Furthermore, there have been criticisms that the FCC's requirements are so vague that a cell phone can pass the guidelines when tested in one position and exceed maximum allowable levels when held in another position.127

... these guidelines can only be as effective as the scientific evidence behind them. Unfortunately, the FCC's radiation emission guidelines were established in 1996, four years before the FDA became actively involved in the research process. This fact underscores the need for further research on the e ffect of radiation at various levels. To reiterate, such research is currently underway; however, it would have been more helpful had the research begun at an earlier date.

Proposed Policy on Cellular Phone Radiation Issues

As mentioned in the section on regulatory responses, the FDA is currently on the right path in promoting further research on cell phone radiation and its effects on human health. However, I submit that the FDA could and should do more. For instance, the FDA should require that all cellular phones currently on the market must include inserts on the FDA's Consumer Update on Mobile Phones. Currently, the addition of these inserts is voluntary. The FDA has complete authority to require the inclusion of these inserts under 21 U.S.C. x 360kk (a)(1), in which the Secretary may require the attachment of warning signs and labels..."176 on such products. In addition, the FDA should require that all cell phone companies' web pages have links to this consumer update, in an e ffort to notify users of previously purchased cellular phones. This requirement of including the FDA's Consumer Update on websites and with all new phones, will allow cell phone purchasers to be fully aware of the potential hazards of cell phone use.

Furthermore, the FDA should require that all cellular phones on the market include an external headset. Once again, the FDA has the power to impose this requirement under 21 U.S.C. x 360kk (a)(1), as the Secretary can prescribe performance standards for electronic products to control the emission of electronic product radiation from such products..."177 There is no question that use of an external headset greatly reduces the amount of RF radiation that penetrates inside the cell phone user's head. Since there are studies which suggest that this RF radiation may be dangerous to human health, requiring inclusion of a headset with all new cell phones is a relatively small price to pay for the prevention of possible negative health effects. These headsets only cost about $5 - $10 and will not be a major expense for the cell phone industry.178

FCC standards also need to be improved. Although it is useful for each phone to have a FCC identification number which can be used to obtain information about that particular cell phone's radiation levels, it is currently a somewhat obscure and difficult process. For instance, the FCC number on many cell phones can only be viewed by removing the cell phone battery. In addition, cell phone consumers are probably not even aware that they can find this information unless they log on to the FCC's website. The FDA, in accordance with its powers under the EPRC provision should require that radiation levels of each cell phone model are more clearly displayed on all phones, along with a brief description of what these levels mean. Again, by providing this information, cell phone purchasers will become more aware of the properties and potential dangers of their particular phone. In addition, FCC standards should be revised as more knowledge about the effects of differing levels of RF radiation becomes available. Currently, as discussed earlier, the FCC's standards seem somewhat arbitrary in relation to human health.

The case law in this area shows us that there is consumer demand for more information about the harms of cell phone use. There is also a demand for increased safety precautions such as inclusion of headsets. The Naquin case, and its lack of a preemption finding, illustrates the belief by many that the FDA is not doing its job in providing this information and/or precautions. If left to the courts, it is possible that each state could prescribe its own standards for cell phones. However, a national standard is much more desirable and efficient. This is precisely why the FDA needs to impose the further regulations suggested here, so that all Americans have access to the same information and are able to take the same precautions to safeguard their health.

Clearly it is difficult for regulatory agencies and courts to take much action amidst all the scientific uncertainty surrounding cell phone radiation. Policy makers must make difficult choices and balance conflicting interests in deciding a course of action which adequately protects the public from potential harm, without running the risk of driving a useful product out of the market. A failure by regulatory agencies and courts to eff effectively act on this unresolved issue could lead to serious, if not catastrophic, consequences. There are over 110 million cell phone users in the United States and industry forecasters predict that the demand for cellular services will grow dramatically, to the point where nearly all Americans will have a cellular phone.179 These facts drive home the point that courts and agencies should take appropriate steps to avoid the possibility of a public health crisis by acting aggressively now. At the same time, there is also a danger that courts and agencies could unnecessarily and unreasonably cause harm to the cellular telecommunications industry, a multi-billion dollar industry that plays a role in advancing the general welfare of citizens and business through improved telephonic communications. Cellular technology enhances the ability of police, fire, and other rescue personnel to provide emergency services, increases business productivity and efficiency, and facilitates the exchange of information. Certainly policy makers must consider these benefits whenever they propose any regulations in this area.

The policy recommendations proposed above correctly balance these two competing goals of 1) informing consumers and preventing potentially detrimental health effects, and 2) preventing unreasonable harm to the cellular telecommunications industry. All of the policy recommendations proposed above are relatively easy and cheap to implement. By combining these actions, along with continued scientific research, the FDA will be providing effective regulation in this area of uncertainty and fear.

Labels: cell phone radiation, FCC, FDA, Harvard, law, legal analysis, ordinance, policy recommendations

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